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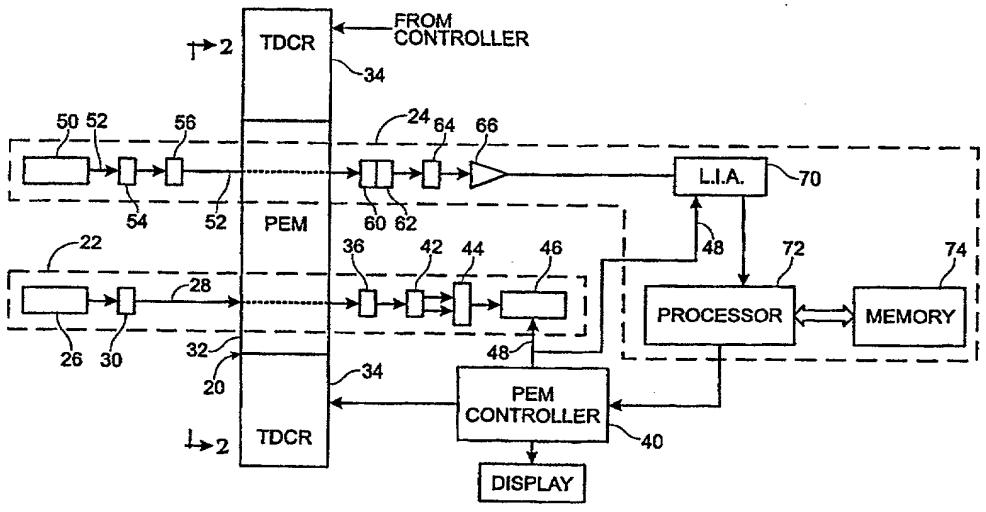
(54) Title: INTEGRATED DIAGNOSTIC SYSTEM FOR PHOTOELASTIC MODULATOR



(57) Abstract

A diagnostic system (24) for a PEM (20) provides optically determined information about the retardance characteristics induced by the PEM (20). The diagnostic system (24) is integrated with the PEM (20) so that the PEM (20) performance may be diagnosed or monitored during operation of the PEM (20). Specifically, the diagnostic system (24) is used alongside an optical setup (22) that employs a primary light beam (28) for conventional purposes such as polarimetry, optical metrology, etc. The diagnostic system (24) includes its own diagnostic light source (50) that is directed through the optical element (32) of the PEM (20) at a location remote from the primary aperture (38) of the PEM (20). Thus, the diagnostic system (24) and the primary PEM (20) operation can be undertaken simultaneously, with one not interfering with the other. The output of the diagnostic system reflects the actual retardance characteristic provided by the PEM (20) and can be used as feedback to adjust the PEM control as needed.